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# TECHNICAL MEMORANDUM

(TM Series)

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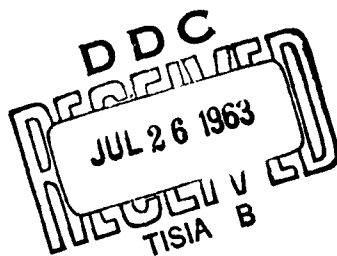
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Air Defense Command Program, for Air Defense Command

Sector and Region Positional Data

by

F. R. Holland

19 April 1963



SYSTEM

DEVELOPMENT

CORPORATION

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SANTA MONICA

CALIFORNIA

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4 March 1963

1

TM(ADC)820/003/00A

### INTRODUCTION

This volume of the TM(ADC)820 Series contains SAGE-wide adaptation data concerning SAGE Sectors, NORAD Regions, Major World GEOREF's and the Winds Aloft Grid. This document constitutes the official data to be used in adapting the Model 9 computer programs for all SAGE Air Defense Sectors and Regions. Certain types of this information, such as the X-2 Display Vertices, are presently in the Unique-to-Site volumes of this TM-Series. The reader is referred to Volume 0 of this series for a list of contents of all volumes.

ADCM 55-32 currently defines adaptation data as being of two categories: 1) ADC Controlled Data and 2) Field Controlled Data. A portion of this document is ADC Controlled Data and therefore constitutes a reason for the ADC Foreword page and the NORAD Preface page authorizing the use of this data. However, since this document contains Field Controlled Data, e.g. Sector Centers, System Centers, X-1 Display Centers, Early Warning System and Display Centers, etc. it is noted here that the aforementioned military preface and foreword page do not in any way usurp the position of the Division Commanders as delegated in ADCM 55-32, but instead reflect recognition of data forwarded by those Commanders to SDC.

Discrepancies noted in any part of this document by SDC on-site programming teams should be forwarded to the author utilizing current established procedures. Revisions to this document will be published as data changes occur or when practical. Changes to previous data will be indicated in each succeeding modification by use of a ">" next to the data change.

### SERIES CONTENTS

VOLUME	0	Series Description
VOLUME	1	Adaptation I/O Limits and Drum Channel Requirements
VOLUME	2	Sector Environment Summaries
VOLUME	3	Sector and Region Positional Data
VOLUME	4	Radar Adaptation Data
VOLUME	5	Voice and Data-Link Communications Adaptation Data
VOLUME	6	Airbase and BOMARC Squadron Adaptation Data
VOLUME	7	ADA Site Adaptation Data
VOLUME	10	Adaptation Guide
VOLUMES	250	SAGE Unique-to-Site Environmental Data
through	351	and Equipment Assignments

19 April 1963

2

TM(ADC)820/003/00B

LIST OF EFFECTIVE PAGES

This page contains a list of effective pages and thus provides current status for each page.

Page No.	Change Letter	Publication Date	Page No.	Change Letter	Publication Date
1	A	4 Mar 63			
2	B	19 Apr 63			
3-4	Basic	20 Nov 62			
5	A	4 Mar 63			
6	Basic	20 Nov 62			
7-9	A	4 Mar 63			
10	Basic	20 Nov 62			
11	B	19 Apr 63			
12-13	Basic	20 Nov 62			

19 April 1963

11

TM(ADC)820/003/00B

4.0 WINDS ALOFT GRID POSITIONAL DATA

<u>SECTOR</u>	<u>DISPLACEMENT WAG CENTER</u>		<u>WAG E-W DIST</u>
	<u>(U)</u>	<u>(V)</u>	<u>(NM)</u>
25TH AIR DIVISION			
SEATTLE	-110.00	+110.00	920.00
PORTLAND	- 44.00	- 91.00	741.00
SPOKANE	- 17.1250	- 20.0312	760.00
26TH AIR DIVISION			
NEW YORK	+ 67.00	+ 18.00	795.00
BOSTON	+ 89.34	+ 7.56	754.00
SYRACUSE	- 75.281	+ 99.375	735.00
WASHINGTON	+131.00	-123.00	730.00
28TH AIR DIVISION			
LOS ANGELES	- 26.73	- 29.75	720.60
SAN FRANCISCO	-210.00	+ 20.00	740.00
RENO	+ 95.94	- 4.20	600.00
PHOENIX	- 8.56	- 9.31	730.00
29TH AIR DIVISION			
GRAND FORKS	+ 9.6875	+ 38.9375	663.875
GREAT FALLS	- 55.00	+ 15.00	770.00
MINOT	+117.00	+ 75.00	800.00
SIOUX CITY	+ 32.00	- 37.00	680.00
30TH AIR DIVISION			
DETROIT	+ 51.00	- 71.00	680.125
CHICAGO	- 50.6562	- 98.6562	920.25
DULUTH	+ 30.1562	+163.0937	786.25
S.S.MARIE	-109.00	+175.00	778.1248
32ND AIR DIVISION			
MONTGOMERY	+ 38.00	+ 60.00	750.00
NORTHERN NORAD REGION			
Δ OTTAWA	+ 55.00	+130.00	750.000
BANGOR	- 6.56	+ 78.00	836.00

The Winds Aloft Grid provides a reference system for storing and retrieving wind data related to distinct portions of a sector's tracking area. The Winds Aloft Grid is a square grid array, which fills the normal times-two (X2) display area. The grid array consists of sixteen congruent squares called grid boxes. Each box is assigned two reference numbers. A box is referenced by one number when data is being stored, and by the other number, when data is being retrieved. These two numbering systems are indicated in the following diagrams:

12	13	14	15
8	9	10	11
4	5	6	7
0	1	2	3

Storing  
(Manual Inputs)

9	11	13	15
8	10	12	14
1	3	5	7
0	2	4	6

Retrieving  
(Interception)

A piece of wind data consists of a wind direction value and a wind speed value. Twelve pieces of data are stored for each grid box, one piece of data for each of the twelve altitudes from 5,000 to 60,000 feet at 5,000 foot intervals.

The wind data used in SAGE is supplied by the Joint Numerical Weather Prediction Unit (JNWPU). The JNWPU, a joint effort undertaken by the Air Force and the U.S. Weather Bureau, is a computerized unit which collects weather data from across the continent. The weather data is stored and retrieved by the computer through a grid referencing system similar to the Winds Aloft Grid system, but on a larger scale.

When fed the dimensions and positions of a Winds Aloft Grid, the JNWPU computer prepares the necessary wind data in the input format required by the DCA manual input program. This data is put on the Air Force Weather Teletype Circuit and directed to the Combat Center of the sector related to the Winds Aloft Grid. At the Combat Center, the data is placed on the SAGE Weather Circuit and directed to the Weather Station at the appropriate DC.

19 April 1963

TM(ADC)820/003/OOB

DISTRIBUTION LIST

PIR-A #4 WECO Group A - New York (5 and 1 vellum)  
WECO - Santa Monica - Room 3311B

PIR-A #31 ADC-CCDSO (3)  
AD4SY-C

PIR-A #36 ADC - DIV. SEC. HQ (104)

PIR-A #41 ADC HQ and NORAD  
ADOOP-E  
ADOAC-EE (Mr. R. W. Carvill)  
4 WWOP  
L/C D. M. Sweeney  
Major Wendt

PIR-A #48 HQ ESD  
ESSGL 416L SPO

PIR-A #5 IBM - Kingston (6 and 1 vellum)

APASTO

AD8CP-E (3)  
AD8CP-T  
AD8CP-E1  
AD8CP-P

RCAF

Air Officer Commanding, ADC HQ (3)  
RCAF Station  
St. Hubert, Quebec, Canada

F/Lt G. R. Todd  
RCAF  
Santa Monica, California

CAS AF HQ Attn: DROP/ROP 3  
Ottawa, Ontario, Canada

SYSTEM DEVELOPMENT CORPORATION

USG Section 4 (3) 4345  
DAS (5) 4365  
FPB SSG System Data Section - 20150 (2)



19 April 1963

TM(ADC)820/003/00B

DISTRIBUTION LIST (continued)

SYSTEM DEVELOPMENT CORPORATION (continued)

STB SSG RUN Designer 4770  
ADD Staff Colorado Liaison, Colorado Springs

FIB HQ 24190A  
FIB Group Heads  
FIB Team Heads (4)  
FIB Group Head - North Bay (1)

PTG Control Unit (6) Phoenix

All Sites (3)

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System Development Corporation,  
Santa Monica, California  
SECTOR AND REGION POSITIONAL DATA.  
Scientific rept., TM(ADC)-820/003/00B,  
F. R. Holland, 19 April 1963, 5p.  
(Contract AF 19(628)-1648, Air Defense  
Command Program, for Air Defense Command)  
Unclassified report

DESCRIPTORS: Programming (Computers).  
Satellite Networks.

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Presents change pages for  
TM(ADC)-820/003/00, "Sector and  
Region Positional Data", by  
R. J. Werner, dated 20 November 1962.

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